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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/521,531

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Nobuhiro Ito

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EXAMINER

NWAONICHA, CHUKWUMA O

ART UNIT

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1621

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/521,531	<b>Applicant(s)</b> ITO ET AL.	
	<b>Examiner</b> CHUKWUMA O. NWAONICHA	<b>Art Unit</b> 1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 February 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>01/14/2005</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Current Status*

1. Claims 1-6 are pending in the application.

### *Priority*

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d).

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-5 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for specifically “a method for deuteration of phenol, diphenylmethane, m-chlorophenol, aniline, sodium benzoate, benzoic acid, diphenylsulfone, o-phenylenediamine and 4-methoxy-1,2-phenylenediamine” does not reasonably provide enablement for “a method for deuteration of **any** compound having an aromatic ring” as claimed.

The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims.

The standard for determining whether the specification meets the enablement requirement is whether experimentation needed to practice the invention is undue or

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unreasonable. Accordingly, even though the forgoing statute does not use the term "undue experimentation," it has been interpreted to require that the claimed invention be enabled so that any person skilled in the art can make and use the invention without undue experimentation. See M.P.E.P. § 2164.

In the instant case, the claims cover "a method for deuteration of **any** compound having an aromatic ring".

Based on the above standards, the disclosure must contained sufficient information to enable one skilled in the pertinent art to practice this invention without undue experimentation. See M.P.E.P. 2164.01. Given the lack of disclosure of "a method for deuteration of **any** compound having an aromatic ring", the instant invention cannot be practiced commensurate in scope with the claims.

The Examiner understands that there is no requirement that the specification disclose every possible embodiment if there is sufficient guidance given by knowledge in the art (See M.P.E.P. § 2164.05(a)). However, the instant case goes beyond what is known in the art, because the specification does not offer any guidance on how one of ordinary skill would go about practicing the invention from the claim to "a method for deuteration of **any** compound having an aromatic ring".

Here, the requirement for enablement is not met since the claims go far beyond the enabling disclosure. Based on the forgoing, **claims** 1-5 are *prima facie* non-enabled for their full scope.

With regard to rejection under 35 U. S. C. 112, first paragraph, the following factors have been carefully considered (*In re Wands*, 8 USPQ2d 1400; CAFC, 1988):

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1. the nature of the invention,
2. the state of the prior art,
3. the predictability or lack thereof in the art,
4. the amount of direction or guidance present,
5. the presence or absence of working examples,
6. the breadth of the claims,
7. the quantity of experimentation needed, and
8. the level of the skill in the art.

(1) **Nature of the invention.** As indicated above, the invention is drawn to “a method for deuteration of **any** compound having an aromatic ring”.

(2) **Breadth of the Claims.** The claims are extremely broad. In particular, **claims** 1-5 that read on specifically “a method for deuteration of **any** compound having an aromatic ring”.

(4) **Unpredictability of the Art.** The instant case is drawn to “a method for deuteration of **any** compound having an aromatic ring. A “method for deuteration of **any** compound having an aromatic ring” as claimed is speculative. Applicants’ claim “a method for deuteration of **any** compound having an aromatic ring” is doubtful and requires objective proof. In such a speculative field, more enablement by way of specific examples is necessary in order to establish the utility of a genus. In re Fisher, 166 U.S.P.Q. 18.

(5) **Amount of Guidance Provided.** Applicants have provided guidance for “a method for deuteration of phenol, diphenylmethane, m-chlorophenol, aniline, sodium benzoate, benzoic acid, diphenylsulfone, o-phenylenediamine and 4-methoxy-1,2-phenylenediamine”. However, when considering that the claims read on “a method for deuteration of **any** compound having an aromatic ring”, it becomes critical to know how

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to “deuterate **any** compound having an aromatic ring”. This is critical to the practice of the invention and therefore should adequately be disclosed.

(7) **Ordinary Skill in the Art.** The ordinary skill artisan would not be able to practice the claimed invention with the current disclosure. It is not clear how to “deuterate **any** compound having an aromatic ring” that applicant are claiming.

Thus, it can safely be concluded that the instant disclosure fails to provide an enabling disclosure for “a method for deuteration of **any** compound having an aromatic ring” as claimed by Applicants.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

**(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.**

**Claims** 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Junk et al., {Preparative supercritical deuterium exchange in arenes and heteroarenes, Tetrahedron letters, 37, 201996, 3445-3448}.

Junk et al. disclose Applicants claimed process for making deuterated aromatic compound. See page 3446.

**Claims** 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsuzuki et al., {Syntheses of phenol derivatives labeled with deuterium, Journal of Deuterium Science (1993), 3(1), 28-32}.

Tsuzuki et al. disclose Applicants claimed process for making deuterated aromatic compound. See abstract.

**Claims** 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Kakinami et al. {JP 06228014}.

Kakinami et al. disclose Applicants claimed process for making deuterated aromatic compound. See abstract.

**Claims** 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Sokol'skii et al., {Selectivity during hydrogenation of phenylacetylene on metallic catalysts, Khimicheskaya (1987), (5), 32-35}.

Sokol'skii et al. disclose Applicants claimed process for making deuterated aromatic compound. See abstract.

**Claims** 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Dinh-Nguyen et al., {GB 1,103,607}.

Dinh-Nguyen et al., disclose Applicants claimed process for making deuterated compounds, including aromatic compounds, which comprises deuterating organic compounds with deuterium oxide in the presence of platinum catalyst. See page 1: columns 1 and 2, and the examples.

**Claim** 6 is rejected under 35 U.S.C. 102(b) as being anticipated by Usov et al., {Highly Mobile Solvent Holes in Viscous Squalane Solutions As Detected by Quantum Beats and MARY Spectroscopy Techniques, Journal of Physical Chemistry A (1999), 103(11), 1690}.

Usov et al. disclose Applicants claimed deuterated aromatic compound. See abstract.

**Claim 6** is rejected under 35 U.S.C. 102(b) as being anticipated by Uno et al., {Infrared spectra of benzene- and pentadeuterobenzenesulfonyl compounds, Spectrochimica Acta, Part A: Molecular and Biomolecular Spectroscopy (1968), 24(11), 1705-12}.

Uno et al. disclose Applicants claimed deuterated aromatic compound. See abstract.

**Claim 6** is rejected under 35 U.S.C. 102(b) as being anticipated by Wszolek et al., {Skeletal rearrangements in mass spectra. I. Bis-aryl compounds, Organic Mass Spectrometry (1968), 1(1), 127-37}.

Wszolek et al. disclose Applicants claimed deuterated aromatic compound. See abstract.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).



Claims 1-5 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6 of copending application No. 10/534,344 in view of Ito et al. and claims 1-3, 5-10 and 13 of copending application No. 10/539,188 in view of Ito et al. This is a provisional obviousness-type double patenting rejection.

The presently claimed method for deuteration of a compound having an aromatic ring, which **comprises** reacting the compound having the aromatic ring with **heavy hydrogen source** in the presence of an activated catalyst selected from a platinum catalyst, a rhodium catalyst, a ruthenium catalyst, a nickel catalyst and a cobalt catalyst is disclosed in the copending application No. 10/534,344 and the copending application No. 10/539,188.

Applicants claim a method for deuteration of a compound having an aromatic ring, which **comprises** reacting the compound having the aromatic ring with heavy hydrogen source in the presence of an activated catalyst selected from a platinum catalyst, a rhodium catalyst, a ruthenium catalyst, a nickel catalyst and a cobalt catalyst; wherein all the variables are as defined in the claims while application No. 10/534,344 teaches a method for deuteration of a heterocyclic ring, which **comprises** subjecting a compound having a **heterocyclic ring (which include a compound having an aromatic ring)** to a sealed refluxing state in a deuterated solvent (**which is a heavy hydrogen source**) in the presence of an activated catalyst selected from a palladium catalyst, a platinum catalyst, a rhodium catalyst, a ruthenium catalyst, a nickel catalyst and a cobalt catalyst.; wherein all the variables are as defined in the claims. On the

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other hand, application No. 10/539,188 teaches a method for deuteration of a compound represented by the general formula 1:  $R^1-X-R^2$ ; wherein the variables  $R^1$  and  $R^2$  are aromatic (**which is a compound having an aromatic ring**) and the other variables are as defined in the claims. See claims 1-6 of copending application No. 10/534,344 and claims 1-3, 5-10 and 13 of copending application No. 10/539,188.

Although the conflicting claims are not identical, they are not patentably distinct from each other because the scope of the claims overlaps substantially with the scope of claims 1-6 of copending application No. 10/534,344 and claims 1-3, 5-10 and 13 of copending application No. 10/539,188, and the method for deuteration of a compound having an aromatic ring of the presently claim invention encompasses the process claimed in the copending application No. 10/534,344 and application No. 10/539,188

The instant claimed method for deuteration of a compound having an aromatic ring, which **comprises** reacting the compound having the aromatic ring with heavy hydrogen source in the presence of an activated catalyst selected from a platinum catalyst, a rhodium catalyst, a ruthenium catalyst, a nickel catalyst and a cobalt catalyst differs from the claims in the copending application No. 10/534,344 and application No. 10/539,188 in that the claims in the copending application No. 10/534,344 and application No. 10/539,188 are narrower in scope. This difference is not a patentable distinction because the copending application No. 10/534,344 and application No. 10/539,188 teach the elements of the claimed invention with sufficient guidance, particularity, and with a reasonable expectation of success, that the invention would be *prima facie* obvious to one of ordinary skill in the art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chukwuma O. Nwaonicha whose telephone number is 571-272-2908. The examiner can normally be reached on Monday thru Friday, 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yvonne (Bonnie) Eyler can be reached on 571-272-0871. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Chukwuma O. Nwaonicha/  
Examiner, Art Unit 1621

/Sikarl A. Witherspoon/  
Primary Examiner, Art Unit 1621

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